CHAPTER 12
SETUP
LESSON PLAN 12

METHOD:

Conference, demonstration, and practical exercise

TIME ALLOTTED:

3.0 hours

COURSE PRESENTED TO:

a. Unit NCOs
b. Instructors
c. TAVSC personnel

TOOLS, EQUIPMENT, AND MATERIALS:

See Appendix A

PERSONNEL:

a. Primary instructor
b. Assistant instructor

INSTRUCTIONAL AIDS:

a. TDRS computer unit
b. Overhead projector
c. Viewgraphs (Appendix E)

REFERENCES:

TM 9-6920-711-12&P-1

APPENDICES:

Appendix A. Tools, Equipment, and Materials
Appendix B. Safety
Appendix C. Test Administrative Guide
Appendix D. Practical Exercise
Appendix E. Viewgraphs

12-1. INTRODUCTION. (5 minutes)

Note. Show Slide 1.

a. **Reason.** To prepare different types of gunnery and force-on-force exercises, you must know how to operate the TDRS setup program.

Note. Show Slide 2.

b. **Training Objective.** In a classroom environment, given a TDRS computer unit and TM 9-6920-711-12&P-1, you will perform the following:

(1) Operate AAR setup program controls and indicators.
(2) Set up a panel gunnery (table gunnery) exercise.
(3) Set up a force-on-force (combat) exercise.
(4) Set up a scaled gunnery exercise.
(5) Set up a tracking training exercise.

c. **Procedures.** During this block of instruction, we will cover the controls, indicators, and features of the TDRS setup program provided with the TDRS computer unit.

12-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE. (140 minutes)

Notes. 1. The students must have the setup program started.
2. Show Slide 3.
3. Discuss each input area briefly.

a. **Set Up Program Menu**. The setup menu contains all controls and indicators required to program training exercises for TWGSS/PGS. The setup menu is divided into 10 input areas. These are:

Note. Show each input area to the students.

(1) Card Control
(2) Application
(3) Validity
(4) Organization
(5) Main weapon
(6) Coax weapon
(7) Exercise type
(8) Tracer
(9) Presentation
(10) Firing

12-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

Notes. Show Slide 4.

b. **Card Control**. This function group contains controls relating to communication with the TDRS memory card. These buttons are used to save data onto a TDRS memory card or read data from the TDRS memory card.

(1) **New setup.** This button allows pre-programmed data of the selected application to be loaded into memory and presented in the input field of the setup program. The values and data previously input will be overwritten.

Note. Read/Modify cannot read how many rounds remain after an exercise. It can read the TDRS memory card only as initially programmed.

(2) **Read/Modify.** When the TDRS memory card is inserted into the TDRS computer unit, this button allows the data from the TDRS memory card to be read and presented in the input fields of the setup program.

Note. If the application programmed on the TDRS memory card was incorrect or not stored in the TDRS computer unit, an error will occur.

(3) **Prog card.** This button saves the current set up data onto the TDRS memory card.

Note. Detailed function of this button will be explained later in the course.

(4) **EXCEL® log.** This button allows the program to read data from the TDRS memory card and save the data on a 3.5 in. disk. The file is stored as a text file (extension .TXT) readable by the EXCEL® program.

Note. Show Slide 5.

c. **Application.** This list box (item 5) displays the application selected or read from the TDRS memory card. Click on the application drop down list box (item 7) and available applications are displayed. Applications for PGS and TWGSS are available.

(1) **Configuration number.** Each application programmed in the TDRS computer unit has a configuration number. This number (item 6) cannot be changed or modified. It is used to verify that the most recent application is being used.
(2) **Application picture.** A picture (item 8) of the selected application is presented in this box.
(3) **LAV-25.** This application (item 9) is used for LAV-25 PGS training.
(4) **M2 and M3.** These applications (item 10) are used by PGS. There are several applications for each of the BFV variants.
(5) **M1, M1IP, M1A1, and M1A2.** These applications (item 11) are used by TWGSS. There is one application for each of the Abrams tank variants.

Note. PGS does not require a range to be used for training. If a training area is selected, this allows an AAR with vehicles presented on a map. The use of this feature is not required to train with PGS.

(6) **Training area.** The information (item 12) indicates the location where the exercise will take place. Click on the drop down list box (item 13) and other locations available for PGS exercises are presented.

(7) **Time selection.** Each training area location available for PGS training is listed in the drop down menu. Each location has standard clock time (SCT) and daylight savings time (DST) listed. Appropriate time must be selected prior to training exercise.

Note. Show Slide 6.

d. **Validity.** This section controls downloading of data from the TDRS memory card to PGS. The criteria for downloading data from the TDRS memory card is selected from this area.

(1) **Card total reload.** This checkbox (item 14) is always checked and allows reload of all vehicle specific data from the TDRS memory card at system power up.

Note. This box must be checked for force-on-force.

(2) **First insert only.** Certain application data will be downloaded at system power up only once if this checkbox (item 15) is selected. This allows for a shorter startup procedure at system power up.

Note. If new ammo is not selected, the ammunition in the system will remain the same as when the system was powered down.

(3) **New ammo.** When this checkbox (item 16) is selected, the vehicle ammunition is reloaded with the programmed ammunition load at each download of the TDRS memory card.

(4) **First insert only.** When this checkbox (item 17) is selected, new ammunition will be downloaded into the system only upon first system power up. If checkbox is not selected, new ammunition will be downloaded each time power is applied to PGS.

Note. Show Slide 7.

e. **Organization.** This input field describes who will use the TDRS memory card (i.e., the vehicle/system where the TDRS memory card will be installed).

(1) **Text input areas.** There are four fields available for programming user information (item 18). Prior to training exercise, the instructor can input information which can be stored in the computer file containing the exercise results from that particular vehicle/system.

(2) **ID.** Each system participating in a training exercise can be given an unique identity number (item 19). There are 1024 identities available for each application of PGS and TWGSS. This identity is sent as an encoded laser message by the transceiver unit to the vehicle under attack. The identity is stored on the TDRS memory card of the vehicle being fired upon. If the checkbox ID auto inc. is NOT selected, then the instructor must provide each TDRS memory card with an identity number prior to programming the TDRS memory card.

(3) **ID auto inc.** If the ID auto inc. checkbox (item 20) is selected, each time the instructor saves the ID it will automatically be increased by one during the set up of the next TDRS memory card. This ensures that two TDRS memory cards do not receive the same ID number during the training exercise.

Note. Show Slide 8.

(4) **Changing organization text names.** The names for each text box can be changed by opening the Setup Menu and selecting Select Organization Text Names submenu. The instructor can change the text box labels to fit the requirements of the unit or training exercise to be performed.

Note. Show Slide 9.

f. **Main weapon.** This input function describes the quantity of main weapon ammunition available at the start of the training exercise. Ammunition can be stored as turret ammunition or stowed ammunition in the hull.

Notes. 1. Main weapon ammunition presented is application specific.
2. The number of rounds stored in the hull cannot exceed the capacity of the vehicle.

(1) **Main weapon ammunition-hull.** This text box (item 21) sets the number of 25 mm rounds stored in the hull at the start of the training exercise.

Note. The number of rounds stored in the turret cannot exceed the capacity of the vehicle.

(2) **Main weapon ammunition-turret.** This text box (item 22) sets the number of 25 mm rounds loaded in the turret at the start of the training exercise.

Notes. 1. All loadtimes are presented in seconds.
2. Loadtime is always set to 0 for automatic weapons.

(3) **Loadtime-turret.** A loadtime (item 23) of 0 must be programmed for the 25mm gun.

Notes. 1. All loadtimes are presented in seconds.
2. Maximum loadtime is 600 seconds (10 minutes).

(4) **Loadtime-hull.** Hull loadtime (item 24) describes the time it takes to transfer hull ammunition into the turret. This time can be adjusted to reflect actual crew experience and skills. Ammunition transfer can be started by the commander from the PGS control panel main menu SIMULATION, submenu REMAINING AMMO.

Note. Show Slide 10.

g. **Coax weapon.** This input function describes the quantity of M240 coax ammunition available at the start of the training exercise. Ammunition can be stored as turret ammunition or stowed ammunition in the hull.

(1) **Coax ammunition-hull.** This text box (item 25) sets the number of coax rounds loaded in the hull at the start of the training exercise.
(2) **Coax ammunition-turret.** This text box (item 26) sets the number of coax rounds loaded in the turret at the start of the training exercise.

Notes. 1. The number of rounds stored in the turret or hull cannot exceed the capacity of the vehicle.
2. All loadtimes are presented in seconds.
3. Loadtime text box is set to 0 seconds.

(3) **Loadtime-turret.** A loadtime (item 27) of 0 must be programmed for the M240 coax weapon.

Notes. 1. All loadtimes are presented in seconds.
2. Maximum loadtime selectable is 600 seconds (10 minutes).

(4) **Loadtime-hull.** Hull loadtime (item 28) describes the time it takes to transfer hull ammunition into the turret. This time can be adjusted to reflect actual crew experience and skills. Ammunition transfer can be started by the commander from the PGS control panel main menu SIMULATION, submenu REMAINING AMMO.

Note. Show Slide 11.

h. **Exercise type.** PGS can perform two types of exercises which are selected through the option button in the Exercise type area.

12-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

Note. The retro reflector must be positioned in the center of mass of the target panel during panel gunnery. The crew will use this point as their aim point and the control panel result will be in relation to this point.

(1) **Panel gunnery.** This training mode (item 29) is designed for firing on stationary or moving panel targets equipped with retro reflector units installed on the center of mass of the target panel.

Note. The retro reflectors must be positioned on the turret of the target vehicles during combat mode training. The crew will use center of mass of the vehicle as their aim point and the control panel result will be in relation to the center of mass of the vehicle.

(2) **Combat mode.** Combat mode (item 30) is designed for force-on-force exercises or firing on vehicles with retro reflector units installed on top of the turret.

Note. Show Slide 12.

j. **Tracer.** The instructor can select the visual effect the gunner/commander will experience during the training exercise.

Note. Tracer effects can be switched OFF during tracking training exercises.

(1) **Tracer on.** The tracer of the round can be switched off or set to normal effect. Check on Tracer on checkbox (item 31) for normal effect.

Note. Burst effects can be switched OFF during tracking training exercises.

(2) **Burst on.** The burst on target and ground burst function can be switched on or off. Check on Burst on checkbox (item 32) for normal effect.

Note. Obscuration effects must be switched OFF during tracking training exercises.

(3) **Obscuration.** Obscuration is not used for the PGS application.

Note. Show Slide 13.

k. **Presentation.** The instructor can select if the crew is able to hear NEAR MISS audio indications in the intercom and view the result of an engagement on the control panel.

Notes. 1. The target sound indications Kill and Hit, and all firing sound indications are NOT switched off.
2. Sound effects can be switched OFF during tracking training.

(1) **Audio.** If the audio checkbox (item 33) is checked, the crew will hear NEAR MISS sound indications in the intercom system. If checkbox is NOT checked, NEAR MISS audio indications will not be heard. All other indications will remain.

Note. Numerical and graphical presentation of fire results are inhibited.

(2) **Fire result on CP.** The instructor can choose control panel result presentation. If the Fire result on CP checkbox (item 34) is checked, the engagement result will be presented to the crew. If the checkbox is not checked, the result will not be presented and the crew will have to rely on their visual indications for decision making.

Note. Show Slide 14.

l. **Firing.** The type of training exercise the crew will perform is selected here. There are three types of training exercises available. Ammunition dispersion and tracking training variables are selected in this box also.

Note. When multiple ammunition rounds are fired, a random dispersion factor will be added as follows:

(a) Coax: 1 mil will be added.
(b) 25 mm: 0.5 mil will be added.

(1) **Full scale (item 36).** This mode is used for exercises with targets in 1:1 scale. The weapon effect simulations are the same as during normal firing.

Note. If the Setup pushbutton (item 39) in the Firing area is pressed, the scale, tracking training timeout, and figure of merit required for a particular training exercise may be selected.

(2) **Scaled gunnery (item 37).** Scaled gunnery is performed against scaled targets. For PGS, a 1:2 (one half) scale or 1:10 (one/tenth) scale can be selected by opening Scale drop down list box (item 40) and selecting the desired scale to be used. The target size and distance must be adjusted to match the selected scale. Minimum distance between a firing system and a target is 60 m.

(3) **Tracking (item 38).** Tracking training allows the crew to practice target tracking using vehicle controls to track targets. If tracking training is selected, the following selections can also be made:

12-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE (Con't).

Note. Show Slide 15.

(4) **Ammunition dispersion (item 35).** Ammunition dispersion may be selected by clicking on the checkbox.

Notes. 1. Tracer, burst, obscuration and sound can be switched OFF, if desired, during tracking training.
2. Show Slide 16.

(a) Tracking time (item 41). Tracking time is the amount of time the system will track a target before tracking is inhibited. A tracking time of 3 - 120 seconds is available. Tracking starts when the control handle palm switch is activated and stops when the trigger is pulled.

Note. Show Slide 17.

(b) Figure of merit parameters (item 42). The instructor must determine the standard with which to evaluate the crew. A value of 0-5 mils with a resolution of 0.1 mil can be selected. The value selected is the radius of a circle placed around the ideal aim point on the target. The result of target tracking is presented as the time the gunner aimed within the circle in relation to total tracking time (result presented as %).

Notes. 1. Each assistant instructor is to conduct a safety briefing for his small group IAW Appendix B.
2. Using Appendix D, practice TDRS memory card setups.
3. Verify TDRS memory card set up using vehicle stations.

12-3. TEST. (20 minutes)

See Appendix C.

12-4. FINAL REVIEW. (5 minutes)

a. **Student Questions.**

Note. Show Slide 18.

b. **Summary of Main Teaching Points.**

(1) AAR setup program controls and indicators
(2) Panel gunnery (table gunnery) exercise setup
(3) Force-on-force (combat) exercise setup
(4) Scaled gunnery exercise setup
(5) Tracking training exercise setup

12-4. FINAL REVIEW (Con't).

Note. Show Slide 19.

c. **Closing Statement.** This block of instruction has taught you how to properly setup TDRS memory cards for the different types of training exercises.

APPENDIX A
TO LESSON PLAN 12

SETUP

TOOLS, EQUIPMENT, AND MATERIALS

A-1. CLASSROOM STATION.

Listed equipment is one per student, except as noted.

1. TDRS computer unit (one per two students)
2. TDRS memory card
3. TM 9-6920-711-12&P-1

A-2. VEHICLE STATION.

Listed equipment one per four students (desired), except as noted.

1. LAV-25 with PGS installed and aligned
2. Panel target with retro reflector unit (one per class)
3. Training area with a minimum of 1000 m of maneuver space

APPENDIX B
TO LESSON PLAN 12

SETUP

SAFETY

Listed general safety regulations are to be strictly enforced during the performance of this lesson.

1. Mount and dismount the vehicle over left-front or through the back hatch.
2. Maintain three (3) points of contact while on top of the vehicle.
3. Follow unit SOP on smoking near vehicle.
4. Do not go over or under gun barrel.
5. Ensure that TURRET DRIVE LOCK is set to LOCKED.
6. Set vehicle MASTER SWITCH OFF.
7. Turn turret power OFF IAW TM 08594A-10/1A, paragraph 2-56.
8. Ensure that AP and HE feed shaft stop knobs (located on left side of main gun feeder) are pushed IN before training. When knobs are out, electrical cables may be snagged causing damage to vehicle fire control system.
9. No cables should be connected or disconnected by untrained personnel.

APPENDIX C
TO LESSON PLAN 12

SETUP

TEST ADMINISTRATIVE GUIDE

C-1. TASK.

Administer test, *Setup*.

C-2. CONDITIONS.

Given a TDRS computer unit, TDRS memory card, and TM 9-6920-711-12&P-1.

C-3. STANDARDS.

The student will correctly answer 8 out of 10 questions within 15 minutes.

C-4. PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED.

a. Evaluator
b. TDRS computer unit (one per student)
c. TDRS memory card (one per student)
d. TM 9-6920-711-12&P-1 (one per student)
e. Written test of Appendix C (one copy for each student tested)

C-5. TEST PLANNING TIME.

Administrative time:	5 minutes
Test time:	15 minutes
TOTAL TIME (per student):	20 minutes

C-6. OTHER INFORMATION.

Before the student arrives, the evaluator will:

a. Ensure that each computer is operational and switched OFF.
b. Ensure that each bench has one TDRS computer unit, TDRS memory card, and TM 9-6920-711-12&P-1.
c. Have written test ready for student to be tested.

C-7. INSTRUCTIONS TO STUDENT.

“The purpose of this test is to evaluate your understanding of the TDRS computer unit setup. You will have 15 minutes to complete the test. Your time will start when I announce ‘BEGIN’ and end when you announce ‘FINISHED’. You may use the materials in front of you during the test".

“Do you understand the requirements of this test?” (Answer questions)
“You may begin.” (Start time)

SETUP

Written Test

NAME _____ UNIT _____

GRADE _____ DUTY POSITION _____

1. What scales may be selected for PGS scaled training mode? _____
2. What checkbox(es) must be checked in VALIDATION for force-on-force training? _____
3. What is the maximum number of rounds that can be loaded into the hull of an M1A1 tank for TWGSS simulation? _____
4. What is the maximum number of 25 mm rounds that can be loaded into the hull of an LAV-25 for PGS simulation? _____
5. What is the minimum and maximum allowable tracking time during tracking training? _____
6. What is the minimum and maximum allowable figure of merit intervals during tracking training? _____
7. What does the abbreviation DST stand for? _____
8. Explain the abbreviation SCT? _____
9. Which drive on <u>your</u> computer is used for the TDRS memory card? _____
10. What is switched OFF on PGS when the AUDIO checkbox ***<u>not</u>*** checked? _____

SETUP TEST ANSWERS

Test

Question	Correct answer
1	1/10 and ½ scale
2	First insert only and new ammo
3	23 rounds
4	420 rounds
5	3-120 seconds
6	0-5.0 mils
7	Daylight Savings Time
8	Standard Clock Time. Normal time used during the year except during summer where daylight savings time is used
9	Check with computer prior to test
10	NEAR MISS audio indications in intercom

APPENDIX D
TO LESSON PLAN 12

SETUP

PRACTICAL EXERCISE

D-1. PRACTICAL EXERCISE.

You will act as the LAV crew evaluator (LCE) for B32, an LAV-25 crew from 1st LAR, Camp Pendelton. The vehicle commander is SSGT Williams and the gunner is SGT Rivera. The crew on B32 has an average reload time of 4 minutes for turret ammunition. The crew will be issued the normal ammunition load for table gunnery exercise (table 12) consisting of:

TURRET	AP:	65 rounds	HULL	AP:	55
	HE:	0 rounds		HE:	0
	Coax:	250 rounds		Coax:	225

During the AAR, use only gunnery results such as ammunition, time, impact point, and all vehicle related events.

D-2. SETUP FOR PANEL GUNNERY.

Application:	PGS LAV
Exercise Area:	29 Palms (Summer)
New Ammo:	Yes
First Insert Only:	No
Main Weapon:	
AP Turret:	50 rounds
HE Turret:	50 rounds
AP Hull:	100 rounds
HE Hull:	200 rounds
Load Time:	0 seconds
Upload Time:	300 seconds
COAX Weapon:	
7.62 Turret:	200 rounds
7.62 Hull:	400 rounds
Upload Time:	300 seconds
Exercise Type:	Panel gunnery
Tracer:	
Tracer On:	Yes
Burst On:	Yes
Presentation:	
Audio:	Yes
Control Panel Presentation:	Yes
Firing:	Full scale
Dispersion:	Yes
User Data:	1st LAR ID 17 VC: SSGT Roberts Gunner: SGT Jones
Event:	Table 12

D-3. SETUP FOR COMBAT MODE (FORCE-ON-FORCE).

Application:	PGS LAV
Exercise Area:	Camp Lejeune (winter)
New Ammo:	Yes
First Insert Only:	Yes
Main Weapon:	
AP Turret:	50 rounds
HE Turret:	100 rounds
AP Hull:	100 rounds
HE Hull:	200 rounds
Load Time:	0 seconds
Upload Time:	300 seconds
COAX Weapon:	
7.62 Turret:	50 rounds
7.62 Hull:	100 rounds
Upload Time:	300 seconds
Exercise Type:	Combat
Tracer:	
Tracer On:	Yes
Burst On:	Yes
Presentation:	
Audio:	Yes
Control Panel Presentation:	Yes
Firing:	Full scale
Dispersion:	Yes
User Data:	1st LAR ID 17 VC: SSGT Roberts Gunner: SGT Jones
Event:	Force-on-force

D-4. SETUP FOR SCALED GUNNERY.

Application:	PGS LAV
Exercise Area:	Fort Irwin (winter)
New Ammo:	Yes
First Insert Only:	No
Main Weapon:	
AP Turret:	60 rounds
HE Turret:	150 rounds
AP Hull:	100 rounds
HE Hull:	200 rounds
Load Time:	0 seconds
Upload Time:	45 seconds
COAX Weapon:	
7.62 Turret:	50 rounds
7.62 Hull:	100 rounds
Upload Time:	500 seconds
Exercise Type:	Panel Gunnery
Tracer:	
Tracer On:	Yes
Burst On:	Yes
Presentation:	
Audio:	Yes
Control Panel Presentation:	Yes
Firing:	Scale (1:2)
Dispersion:	No
User Data:	2nd LAR ID 42 VC: SSGT Wilkins Gunner: SGT James
Event:	Table 4A & 4B

D-5. SETUP FOR TRACKING TRAINING.

Application:	PGS LAV
Exercise Area:	Camp Pendelton (summer)
New Ammo:	Yes
First Insert Only:	No
Main Weapon:	
AP Turret:	50 rounds
HE Turret:	100 rounds
AP Hull:	100 rounds
HE Hull:	200 rounds
Load Time:	0 seconds
Upload Time:	0 seconds
COAX Weapon:	
7.62 Turret:	50 rounds
7.62 Hull:	100 rounds
Upload Time:	0 seconds
Exercise Type:	Panel gunnery
Tracer:	
Tracer On:	No
Burst On:	Yes
Presentation:	
Audio:	Yes
Control Panel Presentation:	No
Firing:	Tracking
Dispersion:	No
User Data:	3rd LAR ID 114 VC: SSGT Werser Gunner: SGT Reid
Event:	Tracking Training

APPENDIX E
TO LESSON PLAN 12

SETUP

VIEWGRAPHS